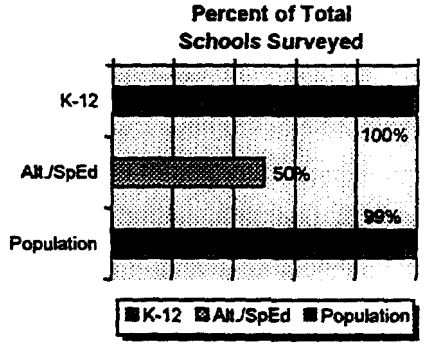
BACKGROUND

In April and May 1994 the District conducted a comprehensive assessment of technology in the schools. To do this a team of twelve retired teachers and substituted teachers walked through 87 school and 4038 rooms. Data from this survey was cross referenced with 1993-94 statistics on school demographics and budget sources. The information below summarizes the key findings. Please refer to Appendix F for a copy of the survey instrument.

DEMOGRAPHICS

The survey team surveyed a total of 4038 rooms in 87 schools. That included all 59 elementary, 16 jr./middle schools and 6 senior high schools. In addition the Team surveyed 2 of the 6 alternative schools, 2 of 3 special education schools and 2 of the 3 adult education schools. Early childhood centers housed within the elementary school were included in the school statistics. However, only one stand alone center was surveyed. None of the administrative buildings were included. This survey covered 94% of the schools and approximately 99% of the K-12 student population.



SURVEY LIMITATIONS

Overall, the survey tended to under-count technology. Technology ordered but not delivered was not counted. Some classrooms were closed due to testing, and not all storage cabinets could be unlocked. Equipment not on premises was not counted (ex., being repaired). In these cases the team relied on reports from school personnel, follow up calls and supplementary District records. The Team did not interrupt classroom activities and in most cases had to rely on visual inspection, which made it more difficult to accurately count modems and identify the capacity or operating condition of computers.

Schools received copies of their reports for verification and the data was revised accordingly. A school could also request its report on disk if they wished to use it for inventory purposes.

STATUS OF THE NETWORK

Wide Area Network: Administration

The Office of Management Information Systems {MIS} currently supports Business Services. MIS manages the wide area network that connects all schools to the central offices to support Business Services and supports desktop automation, including e-mail and Internet applications, staff training, a Technology Help Desk, and library automation projects. MIS now supports over 500 school site and 250 central office computer users of the administrative systems.

STATUS OF THE NETWORK

(continued)

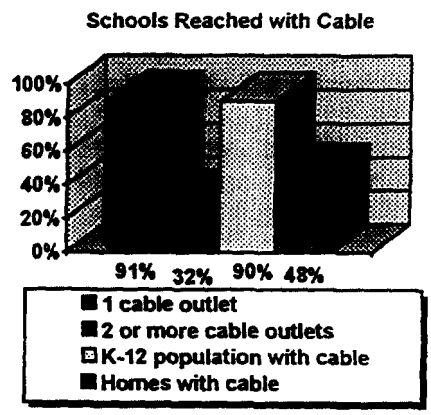
Wide Area Network: Administration

(continued)

- Over the last three years there has been a systematic migration of records from the old mainframe to a more powerful IBM network, including: Student Information Systems (SASI), Financial Information Systems (OBARS) and food services.
- To be added in 1994-95: Human Resources Systems (HRS), Exceptional Children, Research and Testing, Early Childhood systems and a variety of other applications.
- MIS has placed 325 IBM desktop computers plus file servers in administrative and counseling offices in all schools, almost all of which are 286 machines.
- The District leases high speed data lines to support the wide area network, library interconnections and Internet applications.

Cable

The franchise agreement with Cable Oakland requires the company to provide a cable drops in 2 rooms in each public school and municipal building and provide free basic cable service. In addition 5 channels were set aside for city-school use of which 3 are activated: KDOL-TV managed by the District, KTOP operated by the City and PCTV programmed by Peralta Community College District. The cable franchise will be up for renewal in 1996.



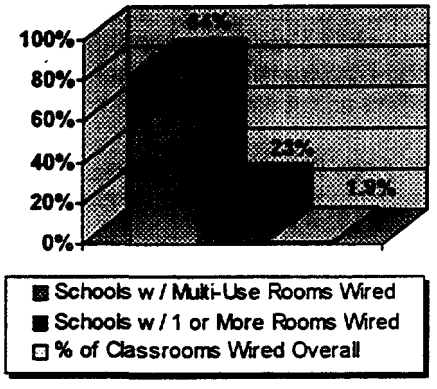
- 91% of the traditional schools have at least one room wired for cable. 32% have two or more outlets. That means KDOL-TV and other cable services can reach approximately 90% of the K-12 students.
- Of the 10 schools not wired for cable, 5 are elementary, 1 jr., 1 high, 2 alternative and 1 adult school. These schools serve 5314 K-12 students. The District is working with the City's Office of Information Services and Cable Oakland to complete the wiring of all schools.
- 48% of the homes in Oakland subscribe to cable, a figure that is somewhat higher in moderate and moderate low income homes.

STATUS OF THE NETWORK

(continued)

Cable

(continued)



- Of the schools that are wired 84% have the cable outlet in the library, auditorium or multi-purpose room. 23% of the schools have one or more classroom connected but only 1.9% of the total number of classrooms are wired. Teachers reported that having to schedule use of a cabled room and moving the class made it difficult to incorporate instructional television into routine classroom activities.

KDOL-TV

KDOL-TV is housed in the Harper Building and is staffed by two video professionals and a paid student crew. KDOL-TV has a direct link to PCTV and shares studio space and some equipment with KTOP. The District has received a grant to upgrade KDOL-TV production and training equipment in 1995.

- KDOL-TV owns two on-line editing suites with graphics capabilities.
- To support the Chapter 1 Homework Hotline KDOL has one "video classroom" with control room and live call-in capabilities.
- KDOL-TV owns three field production units, a variety of microphones, 3 tripods, teleprompter and lighting equipment.
- KDOL shares with KTOP the large studio with light grids and two studio cameras, which are obsolete and primarily used in the field by KTOP.
- KTOP is constructing a state of the art control room for its own use and will donate the now shared control room and equipment to KDOL.
- KDOL-TV regularly covers Board of Education meetings with its portable equipment. The Board of Education meeting room has just been renovated to include a computer projection device, a portable overhead camera, scanner, large monitor, and a computer for presentations and to improve the quality of the picture going out over KDOL-TV.
- KDOL-TV has a manual playback system which limits its hours of programming.

STATUS OF THE NETWORK

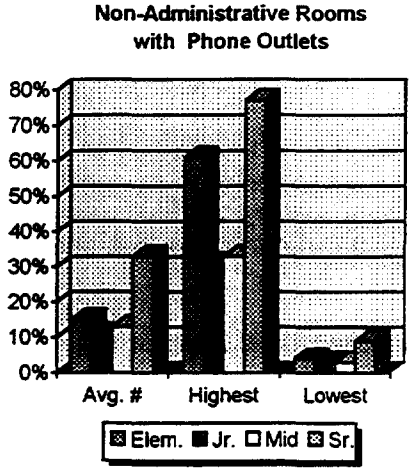
(continued)

Satellite Capacity

- Two schools have satellite receive dishes and participate in the national Galaxy Distance Learning Project. At Hawthorne Year Round Elementary 7 classrooms are wired to receive video while Longfellow Elementary has 5.
- KDOL-TV has a satellite receive-only dish that has a limited range due to its location and is not automated. Any satellite delivered program that KDOL can receive can be cablecast out over the channel. In 1994 KDOL-TV piloted the TEAM's project, a satellite distance learning project originating out of Los Angeles.
- KDOL-TV is directly linked to Laney College's PCTV which has a satellite downlink and a microwave network connecting all its campuses and downtown Oakland.
- The District does not have the capacity to send information by satellite. UC Berkeley's Media Center has full send and receive capabilities and is interested in partnerships to develop more educational applications for the technology.

Telephones

- All schools' administrative offices have phone lines, although many administrators commented that they had insufficient number of lines.
- In the 81 K-12 schools there are 2305 rooms used for student instruction, including classrooms, computer labs, libraries, auditoriums and multi purpose rooms. Of these 414 or 18% have access to outside phone lines although not all of those rooms have telephone instruments. However, some schools central switchboards may not support modem access.
- Of the 51 rooms surveyed in the special education and alternative schools 18 or 35% have phones.
- The percent of all non-administrative rooms with outside phone lines varies markedly from school to school:



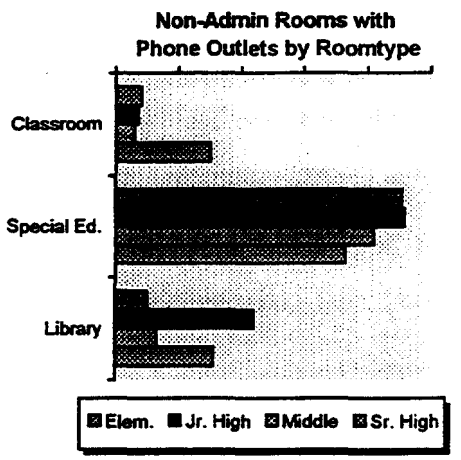
	Aver.	High	Low
Elementary	15%	61%	4%
Jr. High	11%	31%	3%
Middle School	13%	33%	3%
Sr. High	33%	77%	9%

STATUS OF THE NETWORK

(continued)

Telephones

(continued)



- Of the 2073 standard classrooms only 12% have access to phones, ranging from 6 to 8% for elementary, middle and jr high schools and 30% for high schools.
- 89% of the 116 classrooms designated for special education have access to outside lines: elementary - 91%, jr. high - 92%, middle school - 82% and sr. high - 73%.
- 17% of the 119 libraries have phones: elementary - 10%, jr. high - 44%, middle school - 13% and sr. high - 31%.
- 55% of the 24 rooms used by academies are wired.
- Teacher access to phones outside the classroom is also limited: 36 or 17% of the 208 teacher lounges and workrooms have phone lines.

School Networking

- 29 schools have computers in two or more rooms networked:

	Elementary	Jr./middle	Sr. high
Classrooms	11	0	2
Computer Lab	19	7	8
Library	2	0	1
Academies	N.A.	N.A.	7

- All 325 administrative computers on the SASI/OBARS system have direct links to the WAN. Less than 2% of the non-administrative computers appear to have modems.

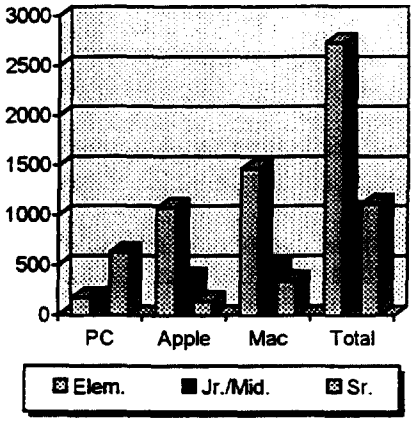
Internet

- *The District has subscribed to the Internet which will be used for e-mail, file transfers, forums and bulletin board services and give students and teachers access to a wide array information services. A computer must have a modem and access to an outside phone line or be linked to the WAN to use Internet.*
- All secondary schools' libraries will have at least one workstation with access to the Internet by June 1995. Another 8 elementary schools will also have Internet access.

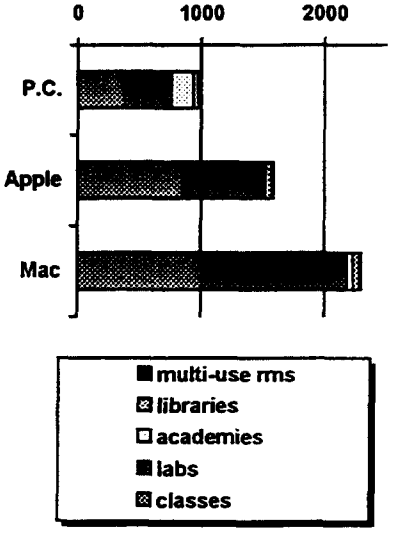
COMPUTERS FOR STUDENTS AND TEACHERS

This section examines the status of computers available to students and teachers (i.e., those computers located in classrooms, computer labs, academies, libraries, multipurpose rooms, auditoriums) for standard K-12 schools. This analysis does not include computers that are part of the SASI/OBARS system or used by administrators and counselors, computers housed in stand alone early child care centers, nor the special education and adult education schools since only half were surveyed. While computers which were donated to schools were included, computers purchased and used only by individual teachers were not counted.

Number of Computers by Type and Grade Level



Location of Computers



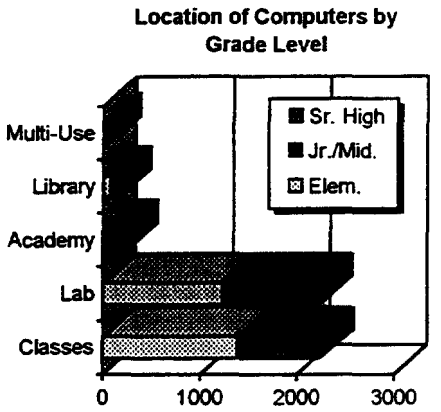
- There are 4875 computers available to teachers and students. The number of computers per school ranges from 2 to 317.
- Of these 20% are IBM or IBM clone personal computers (P.C.), 33% are Apple/Apple IIe, 34% are MAC LCII and the remaining 13% are other MAC models.
- There are 987 P.C.s, of which at least 16% are 386 systems or higher.: 18% are in elementary, 7% in Jr. high, 11% in middle and 64% in high schools.
- Of the 1587 Apples & Apple IIe's 68% are in elementary , 24% in middle and jr. high and 9% in high schools.
- There are 2301 MAC's in the schools. 73% of these are LCII. 64% are in elementary schools, 21% in middle and jr. high schools and 15% in high schools. 173 of the Mac's have additional external floppy drives.
- Most of the older Apples and Mac's have 1 to 2 additional external floppy drives (1222 external drives total).
- Only 4 schools have all their computers in one format. 95% of the schools use a combination of Apple, MAC and/or PC's.
- Overall, approximately 44% of the computers are in lab settings compared to 51% in all classrooms or 45% in non-academy classrooms. 12 schools have no labs.

	P.C.	Apple	MAC	Total
Class	377	848	1011	2236
Labs	380	673	1169	2222
Academy	171	3	51	225
Libraries	42	52	56	150
Multi-Use Rooms	17	11	14	42

COMPUTERS FOR STUDENTS AND TEACHERS

(continued)

- Jr. and middle schools have a larger percentage of their computers in lab settings than do elementary and senior high schools.



	Elementary	Jr/mid.	Sr.	Total
Class.	1382	385	469	2236
Labs	1233	610	379	2222
Academies			225	225
Libraries	74	26	50	150
Multi-Use Rooms	29	13	0	42

- Only one elementary school has fewer than 14 computers, and all but one jr., middle and senior high schools have 28 or more.
- 93% of the schools have 16 or more computers, enough for a lab that could serve approximately one half of a class at a time while 73% could equip a lab with 30 or more computers.
- 18 schools have the equivalent of 8 students or less per computer. 13 schools have ratios of 20 or more students to 1 computer.
- If the 4875 non-administrative computers were distributed evenly throughout all classrooms, there would be approximately 1.9 computers per class or 10.4 students per computer.
- *Note:* These statistics are presented for comparison purposes only and should not be interpreted as recommendations. Many computers have been purchased with restricted funds and/or are part of specific projects and cannot be redistributed.
- Middle and senior high schools have relatively more computers than do elementary and jr. high schools. There are marked discrepancies among the schools.

COMPUTERS FOR STUDENTS AND TEACHERS

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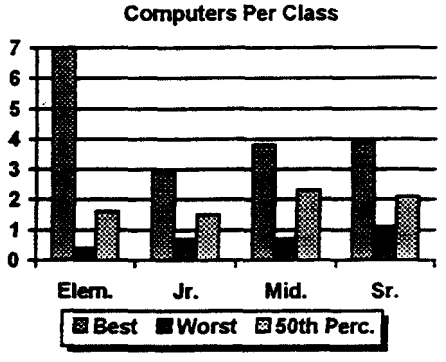
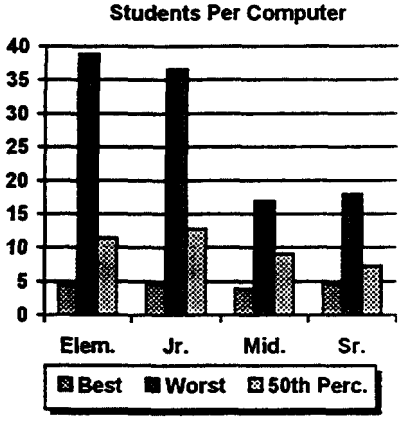




- These discrepancies are greater for elementary and jr. high schools than for middle and senior high schools.

	Computers per class	Students per computer
Elementary		
Best	7.0	4.5
Worst	.4	38.9
50th percentile	1.6	11.5
Jr.		
Best	2.9	4.6
Worst	.7	36.6
50th percentile	1.5	12.8
Middle		
Best	3.8	3.9
Worst	.7	16.9
50th percentile	2.3	9.1
Senior		
Best	3.9	4.7
Worst	1.1	17.9
50th percentile	2.1	7.3

- 11 elementary schools have invested in sets of 30 "Take Home" computers with Jostens integrated learning systems
- Three jr. high schools have installed Tech Lab 2000, each of which employ approximately 10 MAC computers and are part of the 8th grade career exploration program.
- The 7 Academies have integrated 225 computers into their programs.
- *Note:* From interviews at schools it appears that most schools originally put computers in lab settings, but in the face of staff cuts and/or the desire to better integrate technology into classroom instruction, many schools have redistributed computers to classrooms.
- *Note:* Many schools reported that access to computer labs is limited by the absence of knowledgeable staff. (Ex., computer labs are closed if the computer instructor is absent, labs can't be used during non-school hours, etc..)

COMPUTERS FOR STUDENTS AND TEACHERS

(continued)

- *Note:* Because a significant number of computers have been purchased with restricted funds or for a specific program (see above), access to classroom computers and labs is sometimes limited to a specific population within a school. (For example, only students enrolled in the Engineering Academy utilize the CADD computers in the design lab. A school may use Chapter 1 funds to equip a computer lab which must then be used primarily by students who qualify for that program.)

- *Note*: In addition under some categorical programs a school may lose equipment purchased with those funds if it fails to qualify for the program in the future. (For example, if a school fails to qualify for Chapter 1 in subsequent years, the computers already acquired with Chapter 1 funds would have to be redistributed to qualifying schools.)

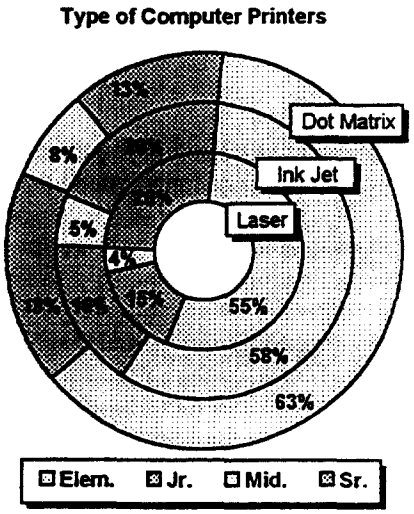
COMPUTER PERIPHERALS

The survey also identified computer peripherals, video equipment and other instructional and general office technology. The survey tended to under-count calculators and other portable technologies that were frequently locked in teachers' cabinets.

Printers

- There are 1434 printers available to teachers and students of which 20% are laser, 71% dot matrix and 9% are ink jets. This general distribution holds across the school levels.

	Laser	Dot	Ink jet	Total
Elementary	161	589	75	825
Jr. high	45	168	21	234
Middle school	12	56	9	77
Sr. high	76	207	15	298



- The overall ratio of computers per printer is 3 to 1.

- In non-lab settings the ratio is 2 computers per printer: 1.9 in elementary, 2 in jr. high and middle school, and 2.8 in sr. highs.

- There are 969 classrooms in the District with at least one computer. Of these 621 or 60% also have at least one printer in that room. Teachers in approximately 40% of the rooms with a computer must go to the lab or take the disk home to print out files.

COMPUTER PERIPHERALS *(continued)*

Printers *(continued)*

- *Note:* Not all of the 1434 printers, especially dot matrix printers, are in use. In some cases a visual inspection could not determine if a printer needed repair. A significant number of printers either could not support the current computers or had been replaced by a better model and were, therefore, excess. For example, an Epson dot matrix printer would be contributed to the school, but the school subsequently invested in a MAC lab, or a dot matrix printer had been replaced by an ink jet.
- *Note:* Because 95% of schools have more than one model and format of computer, a computer may be in a room with a printer that cannot support that computer. For example, there may be one donated P.C. housed in the MAC lab which has only MacWriters.

Computer Projection Devices

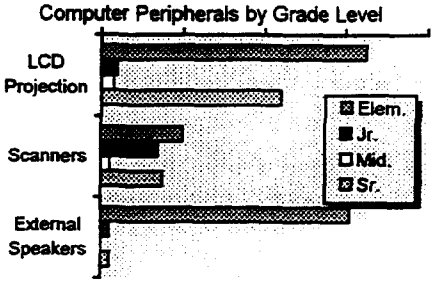
- 20 schools have acquired a total of 116 devices which project a computer image onto a large screen. 65 are in 10 elementary, 4 in 2 jr. highs, 3 in 2 middle schools and 44 in 6 senior high schools. These are used primarily for classroom instruction and presentations.

Scanners

- 26 schools have invested in one or more scanners: 20 in 13 elementary schools, 14 in 5 jr. high schools, 2 in 2 middle schools and 15 in 6 sr. high schools. Scanners are used primarily for desk top publishing and student portfolios.

Speakers

- At least 16 schools have added a total of 65 external speakers to computers. Since non-readers have limited access to most software, it is not surprising that 61 of the 65 speakers have been installed in elementary schools.
- *Note*: The visual inspection did not permit ready identification of computers with internal sound cards.



Modems

- At least 2% of the personal computers and Mac's and 1% of the Apples have modems. 35 Powerbook computers were identified, all of which have built in modems.
- *Note:* Visual inspection did not permit identification of all internal modems.

COMPUTER PERIPHERALS

CD ROM

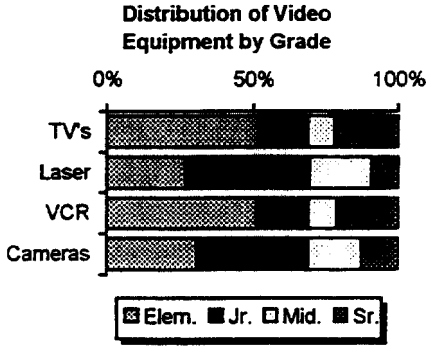
(continued)

- A minimum of 38 or 4% of the personal computers have CD ROM drives.
- At least 213 of the MaC's or 9% have CD ROM's and 32 or 2% of the Apples.

OTHER TECHNOLOGY

VCR

- 330 VCRs are divided among 73 schools. 7 elementary and 1 middle school reported no VCR, which were either stolen or off premises for repair.



- The number of VCRs per school vary dramatically from school to school: 0 to 22 for elementary, 1 to 11 for Jr. high, 0 to 9 for middle and 3 to 26 for high school.
- There were 528 monitors counted for 330 VCRs. Of these at least 40% were 25 inch or larger. A 25 inch or larger monitor is essential for classroom presentations. Many smaller monitors were no longer in use or were in need of repair.
- Few of the portables have ramps, which limits access to VCR/TVs which are on wheeled carts.
- Foreign language and bilingual teachers placed especially heavy importance on having ready access to multi-lingual, multi-cultural videotapes.

Video Equipment

- 23 schools account for 41 video cameras, all of which are VHS format: 12 in elementary, 15 in jr. high, 7 in middle and 7 in sr. high schools. There is no editing equipment in the schools. (See also "KDOL" above.)

Calculators

- 5954 calculators were accounted for, of which 4974 or 84% were in elementary schools. That averages 6.3 elementary students per calculator.
- Most elementary schools reported having at least 1 class set for each upper grade level.
- *Note:* Calculators were under-counted, since many were kept in locked teachers' cabinets.

OTHER TECHNOLOGY

(continued)

Copiers

- 405 copiers, high speed duplicating machines and ditto machines were counted. Of these 217 are copiers, 79 are high volume copiers and another 109 are ditto machines.
- 30% of all copiers and duplicating machines are in administrative offices while 24% are placed in work and storage rooms.
- 3% are in libraries and 17% are in classrooms and labs.
- Note: Teachers generally stated that their access to copiers was very limited, especially to copiers that collate. Most frequent reasons given were: copiers reserved for office use, copiers needing repair, and too few copiers.

Fax Machines

- 58 fax machines were counted in 42 schools. 5 schools had two or more fax machines. 39 or 48% have no fax machine. 23 are in classrooms. Students and teachers at Hawthorne and Longfellow use fax machines to communicate with instructors and other participants in the Galaxy distance learning project.

SECURITY

While all schools appeared to have a school wide security system, most identified vandalism and theft as a major problem, especially with video production equipment, VCRs and computers. Many schools reported that police no longer responded or that response time was very slow. Several interviewees said alarm systems were too sensitive: "A ball hitting a door sets the alarm system off." The survey tended to under-count security devices that were not clearly visible.

- 2523 of the 4875 non-administrative computers are secured to a surface with a cable or metal plate, bar or box.
- While 57% of the Mac's and 56% of the Apples are secured, only 32% of the PC's are. A higher percent of PC's are donated to schools, especially at the elementary and jr. high level. Approximately, 350 computers are in Take Home programs, and at least one high school has a very aggressive computer loan program for teachers and students, which increases the percentage of unsecured computers.

	Apple	MAC	P.C.	Total
Cable with key	432	785	272	1489
Cable, no key	155	370	39	574
Plate	220	98	1	319
Box/bar	87	60	3	126
Total				2523

SECURITY

(continued)

- *Note:* Although relatively few of the new security systems had been installed by the time of the survey, schools gave the District's new contract high marks. Conversely, schools were very dissatisfied with the in-house system: poor key tracking, cables which had to be cut to repair a computer, problems coordinating repairs and re-installation, etc..

- *Note*: Many teachers commented that the security systems limited the use of computers. Most frequent reasons: computers could not be moved, the desk to which the computer was attached was too small, and keys were lost to locked cabinets.

- Approximately 12% of classroom, computer lab and library room doors are protected with metal lock tabs while 32% have solid doors and 17% have screened windows. However, most of the portables with windows and ground floor windows were screened.)

REPAIR AND MAINTENANCE

- *Note:* The survey team was able to identify equipment that was in obvious need of repair only and was still on premises. In spite of the low figures below most interviewees identified ongoing maintenance and low cost access to repair services as high priority needs.

- *Note:* Generally, the District's repair contract with the County received very high marks. Over 1000 pieces of equipment were repaired under the contract between February and May 1994. However, the team handed out information on the repair contract to over 50 teachers who were unaware of the service.

	Total	Number Needing Repair	Percent Needing Repair
Computers			
Apples	1587	62	3.9%
MAc's	2301	23	0.9%
IBM/clones	987	67	6.8%
Printers	1434	37	2.6%
Copiers	405	25	6.1%

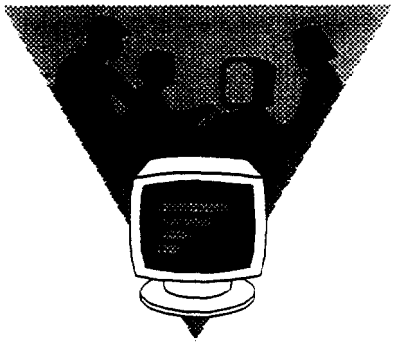
- A significant number of the personal computers are donated used equipment. Oakland Tech, for example, has successfully instituted a program to get contributions from local corporations and individuals and trained students to do basic repairs.

FUNDING

The District is updating its Fixed Assets Master Report. The following information is based on an incomplete March 25, 1994 report on 3206 computers, of which the funding source was identified for 2527. 1993-94 school budgets were also examined.

- Schools have used at least 25 different sources of funding to acquire computers since 1986.
- Only 2.7% of the 2527 computers were purchased using General Purpose funds.
- At least 68% of the computers had been purchased using 4 funding sources: Economic Impact Aid, Chapter 1, Voluntary Desegregation and School Improvement funds.
- At least 6 schools have relied to a large degree on donations and parent group funding for computers. The actual number of computers acquired through donations is difficult to estimate, since schools and/or classroom teachers do not always record donated equipment with the District. Several teachers did not want the Survey Team to record donated equipment, since it was not "District" funded.
- *Note:* Limited G.P. funds and the heavy reliance on categorical funds to acquire technology are major factors in the unequal distribution of technology within the District and within schools.

BACKGROUND



A second survey explored how technology was being used in the District and identified teacher needs. (See Appendix F for survey instrument.)

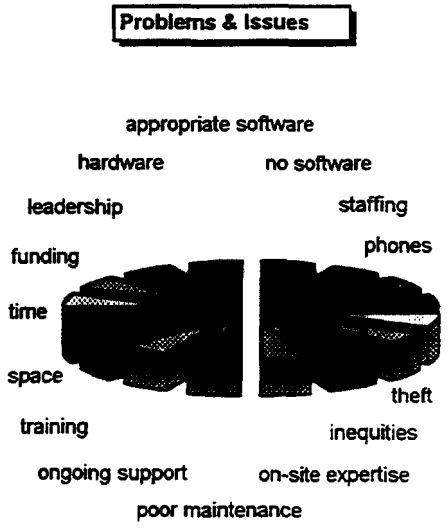
Approximately 150 were distributed to interested teachers and principals during the site surveys, and another 150 were administered at meetings of librarians, counselors, mentor teachers, foreign language teachers and the Curriculum Alignment Technology Committee. 141 completed surveys were returned.

In addition, thirty teachers and administrators were interviewed during the site surveys and all teachers in the five meetings participated in group interviews which focused on issues and visions for the technology plan. Their responses are included in "Problems and Issues" and "Priorities."

Additional Surveys will be distributed during the fall of 1994.

Please note: Questions which received very low responses were not included in the analysis below. Because school identification was optional, the information is teacher, not school, specific, and more than one respondent may have come from the same school.

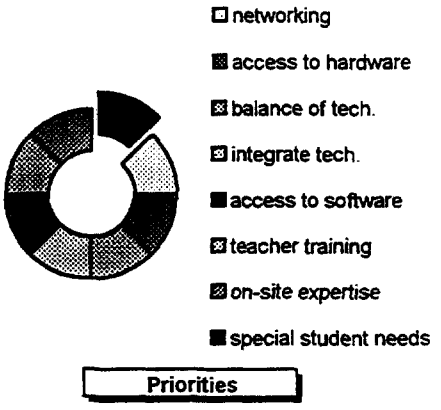
PROBLEMS AND ISSUES



The following factors were most frequently identified as hindering effective use of technology (in rank order):

- District procedures and inefficiencies
- Not having ready access to hardware
- Unequal distribution of technology between and within schools
- Lack of funding, costs of technology. rapid obsolescence
- Lack of software in general (computer and video)
- Lack of software that meets student needs: bilingual, foreign language, "challenging," interactive
- Theft and vandalism
- Other priorities take precedence over technology
- Inadequate training
- Absence of on-site expertise
- Inadequate staffing in general and for labs
- Lack of space
- Lack of leadership and vision; absence of a technology plan
- Lack of time for staff to learn new technologies and instructional applications
- No phones and access to networks
- Absence of ongoing support for teacher and school use of technology
- Poor maintenance and repair of technology

PRIORITIES

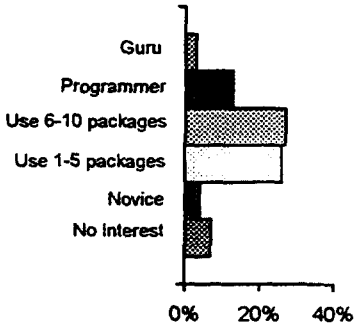


Priorities

The following were most frequently identified as goals for the technology plan (in rank order):

- Networking: for student research, to bring resources to the classroom, to communicate with the home, to deliver instruction to the class and home, to expand use of SASI/OBARS to improve District operations.
- Greater and more equitable access to hardware
- Balanced use of technology given other District priorities
- Integrate technology into the entire curriculum
- Use of technology to support student centered active learning
- Ongoing, easily accessible District support for school & teachers' technology plans.
- Greater access to appropriate, stimulating software and videos
- Ongoing training for teachers
- Build technology expertise at the site level.
- Greater use of technology to address special student needs

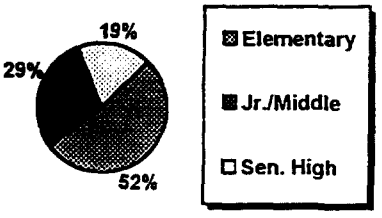
RESPONDENTS



Computer Skill Level

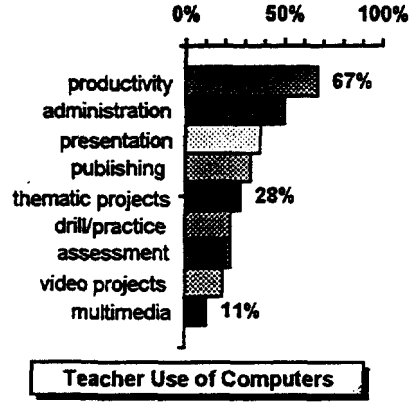
- Respondents to the survey were classroom teachers (60%), counselors (28%) & librarians/librarian assistants (11%). Another 8 administrators and 22 teachers were interviewed.
- 60% had participated in their schools' technology planning.
- 67% of the teachers had use one or more types of computers at school. All counselors used IBM 286's on the SASI system. 34% of the teachers used Apples, 44% Mac's and 10% IBM/clones. 37% of all respondents had one or more computer at home of whom 11% had Apples, 51% Mac's and 43% IBM/clones. Many noted their use was limited by limited access to computers, lack of printers, and/or low teacher skills.
- About 25% could use 1 - 5 software packages while another 25% used 6 - 10.
- Respondents to the survey tended to be relatively computer literate. 7% rated themselves as "computer gurus" while 4% could write programs and only 13% said they were novices. In contrast most of those interviewed on site or in group interviews identified themselves as novices.
- 3% had no interest in computers compared to 7% for video.
- 5% said they could teach video production while another 20% can operate video equipment.

SCHOOL DEMOGRAPHICS



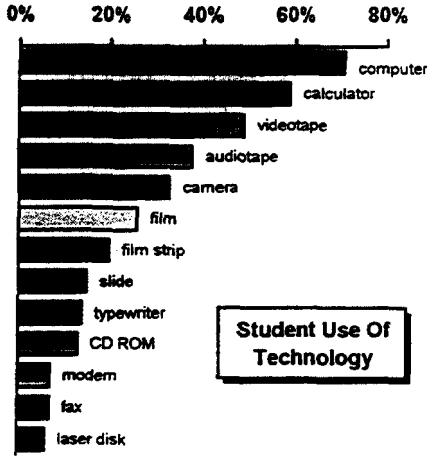
- At least 59 schools were represented in the surveys (school identification was optional).
- 52% of the surveys were from elementary schools with 29% from jr./middle and 19% from high schools.
- 70% of the respondents said technology was included in their School Improvement Plans.
- Less than half of the respondents reported that their schools had software and video inventories. About one fourth didn't know

TEACHER USE OF TECHNOLOGY

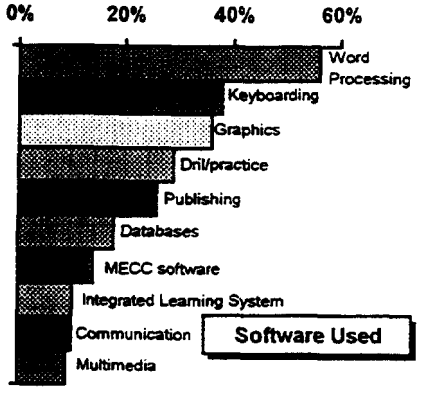


- Respondents tended to use computers more for personal productivity and record keeping (67% and 50% respectively) than for instructional purposes (classroom presentations - 38%, thematic projects - 28%, drill and practice - 23%, multimedia projects - 11%). Some teachers reported it was difficult to develop instructional activities when there were 15 to 30 students per computer in the classroom.
- Lower end technology plays a role. 60% used calculators and approximately 25% use film strips, slides and typewriters. 37% report using audio tapes regularly.
- Video would be used more if tapes and programs were readily available.
- Because of lack of access or lack of expertise, teachers used CD ROM, modems, fax and laser disks least.

STUDENT USE OF TECHNOLOGY

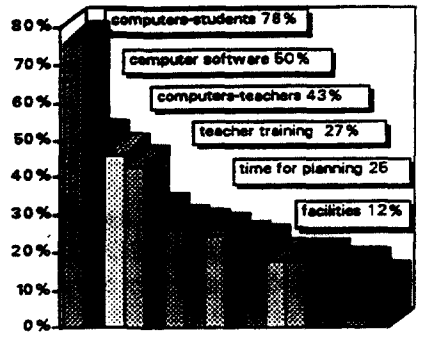


- There is little standardization of software for any application.
- Many teachers were unsure of what software was being used or was available.
- Respondents reported that students used:
  - computers - 71%
  - calculators - 59%
  - videotapes/TV - 49%
  - audio tapes - 38%
  - video cameras - 33%
  - films - 26%
  - film strips - 20%
  - slides - 15%
  - typewriters - 14%
  - CD ROM - 13%
  - modems/fax - 7%
  - laser disks - 6%



- Respondents reported that students used the following types of software:
  - word processing - 56%
  - key boarding - 38%
  - graphics - 36%
  - drill/practice - 29%
  - publishing - 26%
  - databases & spreadsheets - 18%
  - MECC software - 14%
  - integrated learning system - 10%
  - communications - 10%
  - multimedia - 9%
- Many interviewees with Apples were unaware of the MECC software license or stated that it was difficult to duplicate it during the work day.

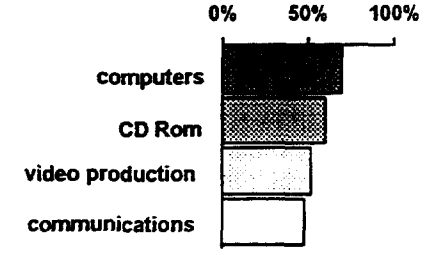
SCHOOL PLANNING



Priorities in Current School Plan

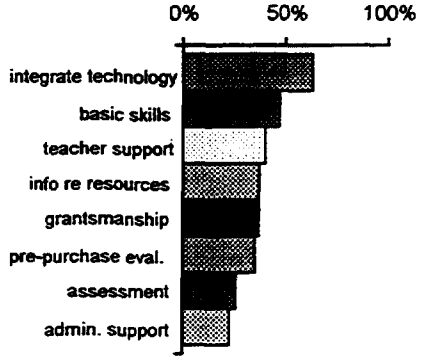
- Respondents reported that their current school plans emphasized:
  - computers for students - 76%
  - computer software - 50%
  - calculators - 46%
  - computers for teachers - 43%
  - teacher training - 27%
  - video technology - 30%
  - instructional TV - 26%
  - time for planning - 25%
  - CD ROM - 23%
  - computers for administrators - 22%
  - laser disk, projection equipment and phones - 18%
  - multimedia & communications - 16%
  - facilities modification - 12%
  - typewriters - 9%
- Over 50% rated principals as most influential in making decisions about all technology except software.
- Individual teachers tended to make decisions about software and were ranked as the next most influential about technology followed by school technology specialists.
- Parents tended to be more active in the selection of equipment than in other areas. That seemed to be tied to schools where parents purchase equipment.
- Least influential were department chairs, district staff, parents, vendors and funding guidelines.

TECHNOLOGY TRAINING



Technology Training Needs

- 70% of the respondents stated that training was needed for computers, 60% - CD ROM, 52% - video production and 48% - communications.
- Approximately 40% rated other teachers, self and friends as the most helpful training sources.
- About 25% identified site sponsored training events, District workshops, District staff and conferences as beneficial.
- Less than 10% identified CUE, vendors, Lawrence Hall of Science, college courses and BASTEC as beneficial.
- Note: respondents were not asked which training resources they had actually used.



Technical Support Needs

- The following the technical support was rated as helpful:
  - Integrating technology into the curriculum - 63%
  - Basic skills - 47%
  - Teacher support - 40%
  - Information about technology resources - 37%
  - Grantsmanship - 37%
  - Pre-purchase evaluation - 35%
  - Assessment - 26%
  - Administrative support - 23%
- Respondents did not agree on the best way to get training. However, on site training, training during school and Summer Institutes, and small classes were rated highest (over 50%).
- Least popular were off-site trainings on Saturdays.
- Interviewees emphasized that "one shot" training events in the absence of ongoing support were ineffective.

This plan treats technology as a tool - a tool that can enhance student learning, reinforce teaching reforms, increase staff productivity and prepare students for the workforce. This theme of technology as a tool - rather than an end in itself - and the integration of technology into the curriculum, staff training and operations of the District is central to this plan.

INTRODUCTION

For years to come, educational technology will be a limited resource for students and teachers. The wide array of hardware, software, curriculum and staff development proposed in the Educational Technology Plan greatly increases technology resources but it does not entirely bridge the gap between supply and demand of these resources. The District must ensure that the limited resources are distributed, made accessible and used in a fair and equitable manner.

EQUITY & ACCESS

Educational technology should be made accessible to all groups of students. The opportunities to learn about and utilize technology should be made available to all students. As new educational programs are planned and implemented, equity and access issues must be considered. The key notion is not that every group must participate in every program, but rather that each program is based on student need and that each student with that need is addressed by that program. The access to all programs should be as wide as possible without diluting the educational program.

- **Gender**: Are programs accessible to male and female students?
- **Ability**: Are students at all ability levels being served appropriately?
- **Socio economic**: Does the program discriminate against students from lower income homes?
- **Age/grade**: Do we service all students during their school career? Is articulation appropriate? Is a program available to teachers at all grades?
- **Special Education**: Are programs accessible to the students at the appropriate level?
- **Bilingual/ESL**: Are programs accessible to these students at the appropriate level?

[from "Educational Technology: Blueprint for Change" 1991]

BARRIERS

During the planning and implementation process, barriers to equitable technology integration must be identified and removed. The Planning Committee has identified the following barriers to equitable access to technology in the OUSD:

- Insufficient GP funding for technology
- Heavy reliance on categorical funding which is not available for all schools and students
- Competition for funding from other priorities
- Lack of expertise at the school sites
- Insufficient delivery of staff training and support
- Insufficient support for school site planning
- Limited access to hardware and software
- Overloaded management systems
- Lack of coordination within the District

This section is the heart of the Technology Plan. It is divided into twelve strands:

#1: Integration of Technology
- *Curriculum Integration*
- *Technology Learning Continuum*
- *Evaluation of Technology Use*
- *Evaluation as an Assessment Tool*

#2: Professional Development
- *Training Curriculum*
- *Incentive Programs*
- *Technology Resources & Training Center*
- *Other Support Services*
- *Technology Literate Staff*
- *Evaluation*
-

#3: Access to Technology
- *Student Access*
- *Staff Access*
- *Basic Technology Package*

#4: Library and Media Centers
- *Basic Technology Package*
- *Library Services*
- *Staffing*

#5: School to Work
- *Academies*
- *Student Training*
- *Career Planning*

#6: Families and Community
- *Community Partnerships*
- *Community Education*
- *Community Information*

#7: Video Communications
- *KDOL-TV Facilities*
- *Site Facilities*
- *Video Delivery of Instruction*
- *Video Production Training*

#8: Networking
- *Management*
- *Infrastructure*
- *Applications*

#9: Administrative Technology
- *Infrastructure*
- *Management*

#10: Other Technology Support
- *Purchasing*
- *Security & Insurance*
- *Repair & Maintenance*

#11: Coordination and Management
- *Board of Education*
- *Technology Coordinating Committee*
- *Site Technology Committees*
- *District Technology Coordinator*
- *Technology Service Center*
- *Implementation of the Technology Service Center*

#12: Funding and Resource Development
- *1995-96 Funding Recommendations*
- *Funding Options*
- *Implementation Plan Funding Elements:*

Technology must be an integral and required part of education- one that is included in the same processes that define what and how we teach to the whole student. The use of technology must be driven by the curriculum and the needs of students and be wedded to school reform. It must be utilized as a tool to foster curiosity and the love of learning and to develop the basic skills of critical thinking, problem solving, and interpreting, analyzing and synthesizing information.

CURRICULUM INTEGRATION:

Technology will be integrated into all curricular areas and into the curriculum development and adoption process and will be used effectively to deliver curriculum and instructional resources. This integration process will incorporate all special services, including bilingual education, early childhood education, exceptional children programs and adult education.

Current Activities	Phase I	Phase II
	• Modify the curriculum development & textbook adoption process to include the development & adoption of technology based materials.	
	• Develop the process & procedures to integrate technology into all phases of the curriculum.	
	• Initiate process of integrating technology into the core curriculum.	• Initiate process in all other areas of instruction.
• Develop criteria for & select widely available technology to match curriculum objectives.	• Implement	
	• Establish standards for computer software, cable programming, video materials & other technology software.	• Review & revise technology software standards.
	• Research & identify computer software, cable programming, video materials & other technology software.	
• Identify, assess & develop strategies for use of KDOL as a distance learning resource.	• Identify, assess & develop strategies for use of other available distance learning resources (satellite, OUSD network, Internet, etc.).	• Implement strategies. • Ensure maximum accessibility to distance learning technology(ies).
• Develop the curriculum for & train teachers in a math & science based video production curriculum.	• Implement the Math/Science Based Video Production Program.	• Evaluate & revise.

TECHNOLOGY LEARNING CONTINUUM:

All students will be able to use technology in the learning process and master the technology tools that are essential for success in the workforce. The District will develop a scope and sequence of technology skills that reinforce essential learning skills (example, critical thinking, analysis and synthesis, social cooperation). Teachers will be trained in the use of the required technology, including legal and ethical uses.

Current Activities	Phase I	Phase II
	• Establish a technology learning continuum with benchmarks for students for pre-K through high school.	• Review continuum & benchmarks on an annual basis.
• Establish a code of legal & ethical use of technology for students & staff.	• Implement this code into the curriculum.	
	• Integrate this continuum and code of ethics into the curriculum development & adoption process.	
	• Integrate continuum for grades k-6.	• Integrate continuum for grades 7-12.
	• Integrate this continuum & code into the required technology training for teachers, focusing on grades K-6.	• Integrate this continuum & code into the required technology training for teachers focusing on secondary grades.

EVALUATION OF TECHNOLOGY USE:

The impact of technology on student learning and teacher effectiveness will be evaluated on a regular basis.

Current Activities	Phase I	Phase II
	• Develop a strategy to evaluate student mastery of core technology tools based on the technology learning continuum.	• Implement
	• Develop a strategy to evaluate the effectiveness of technology based applications.	• Implement the evaluation strategy.
• Approve criteria for the approval of new technology projects as recommended by the Technology Coordinating Committee.	• Disseminate Criteria • Set up & maintain a process for the approval of new technology projects as recommended by the Technology Planning Committee.	
	• Identify, document & evaluate all current District & site technology based projects.	
	• Develop a dissemination strategy.	• Disseminate effective technology-based projects.

TECHNOLOGY AS AN ASSESSMENT TOOL

Technology will be used to improve assessment of student performance and to provide timely information on student achievement to both students and parents.

Current Activities	Phase I	Phase II
	• Establish "scope and sequence" benchmarks to evaluate technology competence.	
	• Modify existing assessment strategies to incorporate technology.	
	• Pilot & evaluate technology based assessment strategies.	• Expand as indicated.
	• Explore the feasibility of using voice mail systems to communicate to parents re student performance.	• Explore the feasibility of using e-mail to communicate with parents.

Technology training for teachers and staff will be an ongoing District and School Site priority. Training will be designed to emphasize integration of technology into the curriculum, technology as a tool to strengthen teaching reforms, the role of teachers as learning facilitators, assessment, & improved productivity. Technology training and support will be accessible to all staff, and all staff will be technology literate. Each school will have on-site technology expertise.

TRAINING CURRICULUM

The District will prepare guidelines for professional growth in technology which will address all four levels of learning: awareness, investigation, integration/assimilation and upgrading of skills. The curriculum will be tied to the students' technology learning continuum and benchmarks.

Training will strengthen on-site technology expertise. To this end the District and school sites will train and support a cadre of technologists, technology curriculum specialists and telementors as teacher trainers to train and support school site staff.. The District will deliver technology training in a wide variety of formats including video, teleconferences, electronic communications. The District and school sites will develop partnerships with other institutions to provide staff development. Schools will make teacher training a priority and will dedicate a portion of its resources for technology training.

Current Activities	Phase I	Phase II
	• Establish content & performance standards for technology competencies.	
	• Survey staff technology competencies & needs.	
	• Coordinate all existing & future staff technology training in the District.	
	• Coordinate District technology training with technology training programs provided by other institutions.	
	• Coordinate technology training with major curriculum initiatives (ex., School to Work, curriculum alignment, Goals 2000, Middle School Initiatives).	

TRAINING CURRICULUM (continued)

	• Prepare a comprehensive District technology training plan for all staff to support the core curriculum and on-site expertise.	• Implement
• Expand the telementor program.	• Have a trained technology teacher at each site.	• Have all teachers technology literate.
	• Devote a portion of State-funded Staff Development Days to a recommended number of hours for technology training.	• Implement the training to support technology integration in the curriculum.
	• Require each site & special services to develop technology training component in its comprehensive plan.	
• Use KDOL-TV to deliver professional development segments.	• Pilot two way video training.	• Expand
• Initiate training using the Internet.	• Expand training delivery to include Internet, satellite.	

INCENTIVE PROGRAMS

The District and school sites will have incentive programs to encourage all staff to upgrade their technology skills on a regular basis.

Current Activities	Phase I	Phase II
	• Develop & implement a teacher incentives program.	